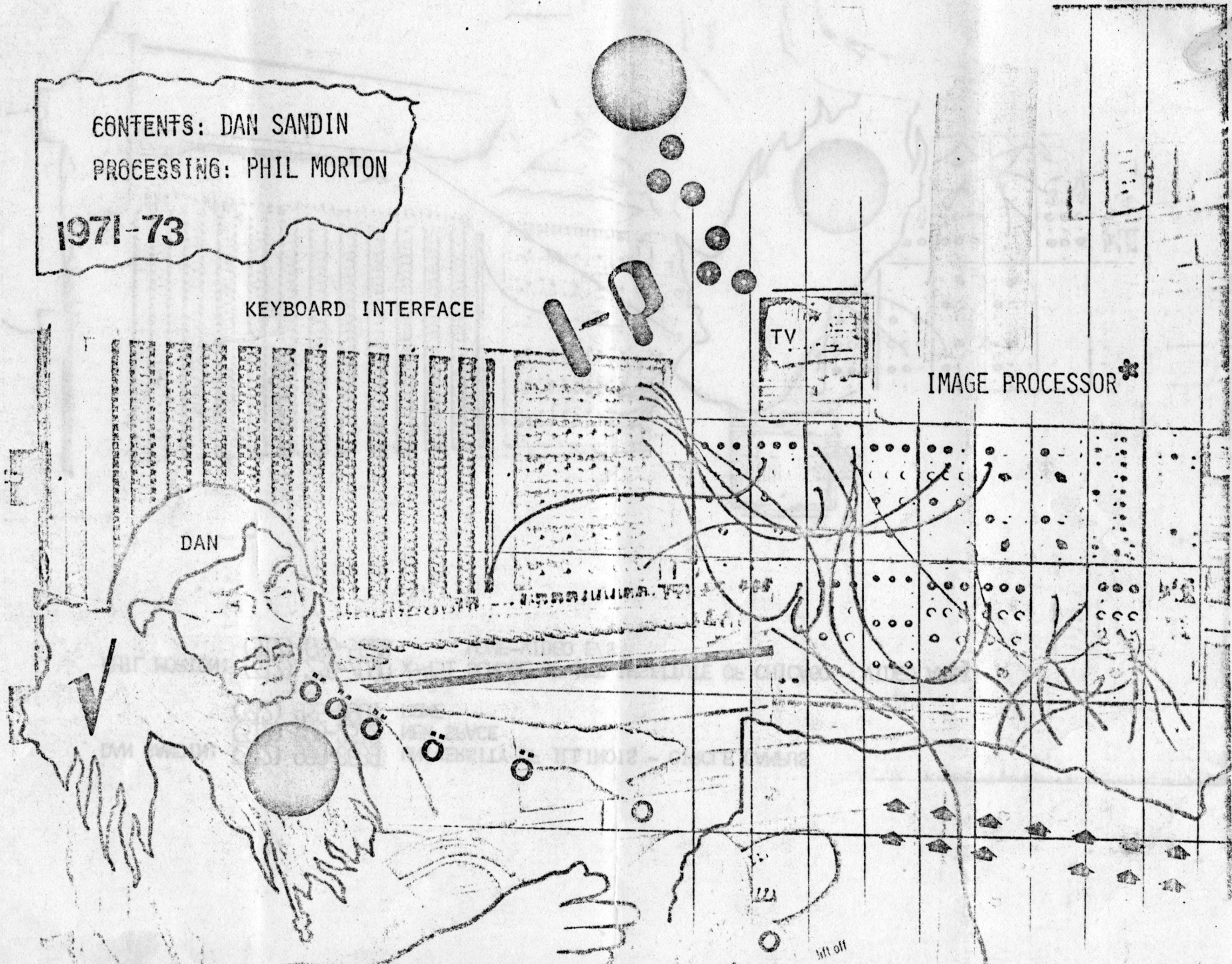CONTENTS: DAN SANDIN

PROCESSING: PHIL MORTON

1971-73

KEYBOARD INTERFACE
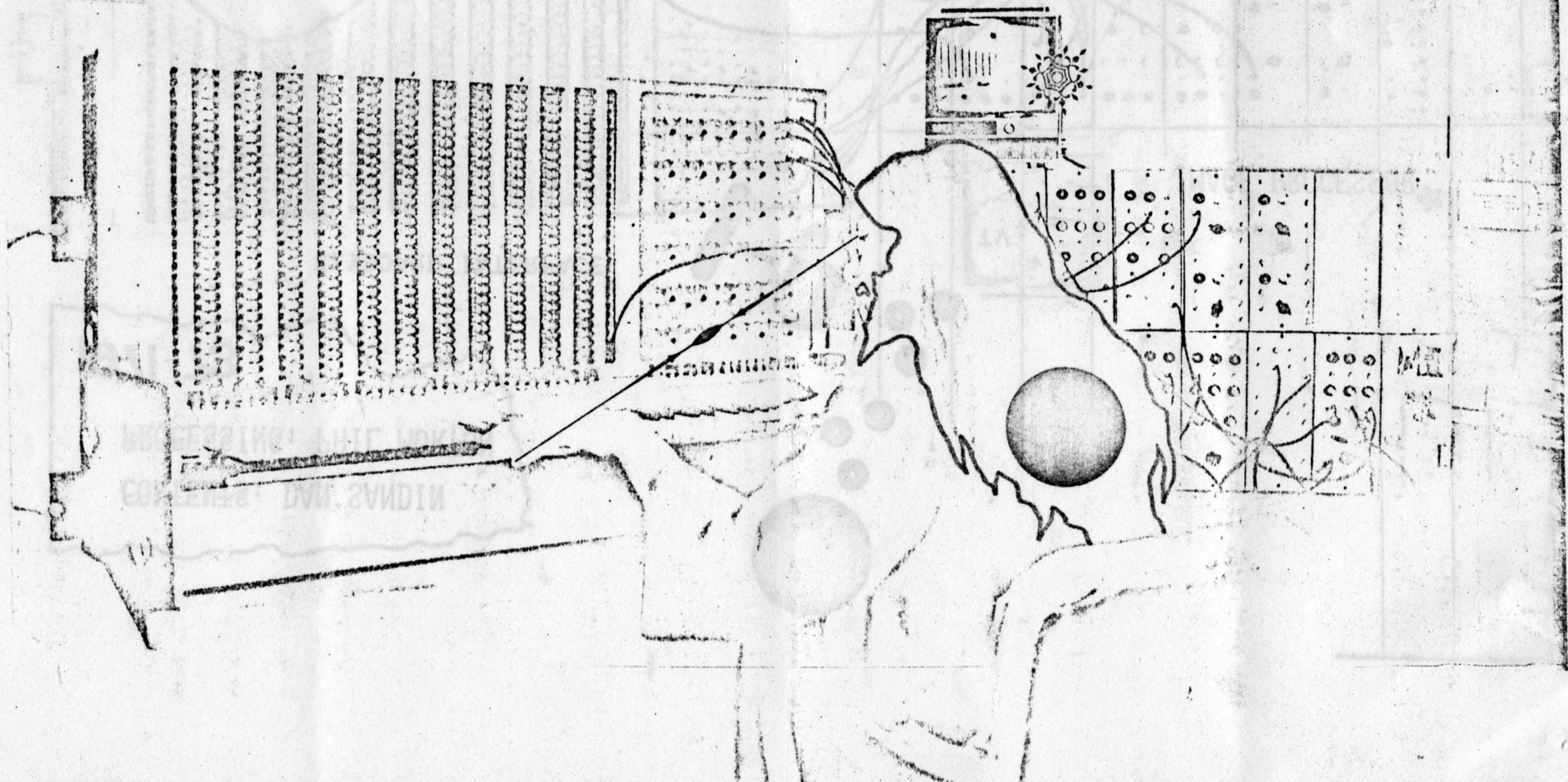
TV

IMAGE PROCESSOR

DAN

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THE DAN SANDIN IMAGE PROCESSOR

(PRESENTLY 'OPTIMIZED' FOR VIDEO SIGNALS)

*'...a member of a special class of EDUCATIONAL machines called a
DESIGN-TOOL-LEARNING-MACHINE...'*

IN BRIEF THE IMAGE PROCESSOR (I-P) IS A PATCH PROGRAMMABLE GENERAL PURPOSE ANALOG
COMPUTER WHICH IS OPTIMIZED FOR REAL-TIME PROCESSING OF IMAGES. I HAVE BEEN DESIGNING
AND BUILDING IT OVER THE LAST TWO YEARS...

THE I-P ACCEPTS NATURALISTIC IMAGES, MODIFIES AND COMBINES THEM IN COMPLEX WAYS AND

DISPLAYS OR STORES THE RESULT. A TELEVISION CAMERA, FILM-CHAIN, VIDEO-TAPE RECORDER OR

SIMILIAR DEVICE CAN BE USED TO DECODE MOVING IMAGES IN AN ELECTRONIC SIGNAL, A FORM

WHICH THE I-P ACCEPTS. A TELEVISION MONITOR DECODES THE SIGNAL AND DISPLAYS THE

MODIFIED IMAGE. THE INSTRUMENT IS PROGRAMMED BY ROUTING THE IMAGE THROUGH VARIOUS

PROCESSING MODULES AND THEN OUT TO A MONITOR OR VIDEO-TAPE RECORDER. THE MODULES ARE

DESIGNED TO MAXIMIZE THE POSSIBILITY OF INTER-CONNECTION, THEREBY, MAXIMIZING THE NUMBER

OF POSSIBLE MODIFICATIONS OF THE IMAGE.

This description of the image processor may sound like a sophisticated special-effects
board in a television station. There is of course a similiarity. A good analogy would
be to compare a desk calculator to a general-purpose digital computer; both the desk
calculator and digital computer can ADD and SUBTRACT numbers. The 'digital-computer'
however, can STORE a program which it executes in time...and more importantly, the
'digital-computer' can modify its program based on RESULTS of the program.

The image processor has in addition, the power to execute a program-in-time, and more
importantly, to modify what modification is done based on the content of the input image
and the program. The image processor is a GENERAL PURPOSE 'machine' and the special-effects
board is not. Further-on than processing, the image processor synthesizes, generates,
and colorizes black and white video images into COLOR .

TABULAR COMPARISON OF TEACHING MACHINES AND DESIGN-TOOL-LEARNING-MACHINES:

TEACHING MACHINES	DESIGN-TOOL-LEARNING-MACHINES

MOTIVATION

Teaching machines usually depend on adversive external rewards, ie: grade threats of failure to encourage user to use machine...	The user is able to do what he considers to be something worth doing, ie: a problem or project of his own choice...

DIRECTION OF ACTION

The machine directs the user along prescribed paths with little options left to user discretion...	The user acts on the machine by structuring it to do a personally-preferred task...

AVAILABILITY OF STRUCTURE

The structure of the machine (the program and logic behind the program) is inaccessible, contributing to the users lack of control of the situation...	The structure of the machine is accessible to the user, allowing him more control of the learning situation...

PROBLEM OF VARYING LEVELS OF COMPETENCE

Must have separate programs tailored to various levels of competency with attendent placement of problems...	Because of its generalized structure users of varying levels may interact with the machine profitably...

PACING OF USER

Although the user may go along at
his own pace, he cannot skip sections
in which he is not interested (and
come to them later), and can usually
not investigate one area to much
greater depth than other users' executing
the same program...

The user is in control; he may take
as long or as short of a time period
for a particular subject and
as he likes. He may investigate any
area he desires to in depth...

REPERTORY OF USERS' RESPONSES
(INPUT TO MACHINE)

Limited to a small number of specific
operations, ie: pushing one of 5 to 26
buttons...

Large and varied, including keyboard,
joysticks, biological and environmental
sensors...

FEEDBACK
(OUTPUTS OF MACHINE WHICH RESPOND TO USER'S ACTION IN-TIME)

Often delayed and usually limited
to correct/incorrect with perhaps
some additional information or a
program branch...

Instantaneous, immediate, multi-sensual,
unambiguous and varied; includes colored
kinetic events, tactile audio and environ-
mental information...

TEACHING MACHINES	DESIGN-TOOL-LEARNING-MACHINES

GENERALITY

The machine is usually designed for a particular subject and requires reprogramming by other than the user, to new things...	The machine can accomplish many tasks and can be restructured to accomplish new tasks under user control...

NU·ANCE

The teaching machine is sensitive only to gross ordering of input of information...	The design-tool-learning-machine is capable of sensing small variations of input (much information is carried in small variations of intonation, gesture, etc...)...

At yet another level the IMAGE PROCESSOR and allied machines are designed for the express purpose of modifying consciousness, increasing awareness, centering, learning, (non-linguistically) etc...

Machines whose primary function is this 'consciousness modification' are not new; a musical instrument is a good example of a machine designed to modify "'consciousness'" (what else is it used for)...

AT THE MOST IMMEDIATE LEVEL AND AT THE FINAL LEVEL IT HAS BEEN A 'JOY' WORKING WITH THE INSTRUMENT; I HAVE LEARNED A GREAT DEAL FROM IT...

The IMAGE PROCESSOR is not yet finished per se; yet it is functioning completely and perfectly. It is 'modular' in electrical and physical construction and as a result 'grows' in proportion to user-extensibility-of-desire...(lust-for-power/lust-for-subtlety)... EXPANSION-ing/EXTENSIBILE-ity is steady, slow and full-of-love for/in a cybernetic 'BEING'.